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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/761,296	01/22/2004	Miki Onaka	1344.1130	3083

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EXAMINER	
DIACOU, ARI M	
ART UNIT	**PAPER NUMBER**
3663	

DATE MAILED: 11/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/761,296	ONAKA ET AL.	
	Examiner	Art Unit	
	Ari M. Diacou	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) *19* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10-26-2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Inventions drawn to claims 1-18 and 19 are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the method could be preformed on an apparatus employing a polarizer or a polarization randomizer.

2. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

3. Newly submitted claim 19 is directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: it could be performed on an apparatus employing a polarizer or a polarization randomizer.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 19 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-4, 9, and 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Kosaka et al. (USP No. 5943162).

6. Regarding Claim 1, Kosaka discloses: An optical amplifier having a polarization mode dispersion compensation function comprising:

- a polarization control section that controls a polarization state of input signal light; [Fig 2, #3] [Col. 9, lines 5-12, 34-46]
- a polarization mode dispersion generation section that has an optical transmission medium which has birefringence capable of giving a differential group delay between orthogonal polarization mode components of the signal light controlled in said polarization control section, and which is doped with a rare earth element; [Fig 2, #4]
- a pumping light supply section that applies pumping light capable of pumping said rare earth element, to the optical transmission medium in said polarization mode dispersion generation section; [Fig 2, #6] [Col. 9, lines 12-15] [Col. 10, lines 64-67] [Col. 7, lines 11-16]

- a monitoring section that monitors a polarization mode dispersion generation state of the signal light output from said polarization mode dispersion generation section; [Fig 2, #9] [Col. 9, lines 25-27]
- and a control section that controls said polarization control section so that polarization mode dispersion monitored in said monitoring section is reduced. [Fig 2, #10] [Col. 9, lines 27-29, 52-56]

7. Regarding Claim 18, Kosaka discloses: An optical amplifier having a polarization mode dispersion compensation function comprising:

- a polarization control section that controls a polarization state of input signal light; [Fig 2, #3] [Col. 9, lines 5-12, 34-46]
- a polarization mode dispersion generation section having an optical transmission medium with a rare earth element; [Fig 2, #4]
- a pumping light supply section that applies pumping light to the optical transmission medium; [Fig 2, #6] [Col. 9, lines 12-15] [Col. 10, lines 64-67] [Col. 7, lines 11-16]
- a monitoring section that monitors a polarization mode dispersion generation state of the signal light output from said polarization mode dispersion generation section; and [Fig 2, #9] [Col. 9, lines 25-27]
- a control section that controls said polarization control section, so that polarization mode dispersion monitored in said monitoring section, is reduced. [Fig 2, #10] [Col. 9, lines 27-29, 52-56]

8. Regarding Claim 3, Kosaka discloses: An optical amplifier having a polarization mode dispersion compensation function according to claim 1,

- wherein said monitoring section monitors the power of signal light output from said polarization mode dispersion generation section, [Fig 2, #9] [Col. 9, lines 27-29]
- and said control section controls said pumping light supply section so that the power of signal light monitored by said monitor section is fixed to be constant at a previously set value. [Fig 2, #10] [Col. 9, lines 27-29]

9. Regarding Claim 2, Kosaka discloses: An optical amplifier having a polarization mode dispersion compensation function according to claim 1,

- wherein said monitoring section monitors the power of signal light output from said polarization mode dispersion generation section, [Fig 2, #9] [Col. 9, lines 27-29]
- and said control section controls said pumping light supply section so as to obtain a gain which makes the power of signal light monitored by said monitor section to be the power at the time of input or above.

  [It is clear that the clause j. of this office action is a special case of clause h., and Kosaka's invention could perform this function.]

10. Regarding Claim 4, Kosaka discloses: An optical amplifier having a polarization mode dispersion compensation function according to claim 1,

- wherein said monitoring section monitors the power of signal light output from said polarization mode dispersion generation section, and said control section controls said pumping light supply section so as to obtain a gain which makes the power of signal light monitored by said monitor section to be the power at the time of input or above. [Fig 5, #15] [Col 11, lines 21-24]

11. Regarding Claim 9, Kosaka discloses: An optical amplifier having a polarization mode dispersion compensation function according to claim 1, wherein said monitoring section comprises:

- a branching device which branches a part of the signal light output from said polarization mode dispersion generation section, as monitor light; [Fig 2, #8] [Col. 9, lines 24-33]
- an output monitor which monitors the power and polarization mode dispersion generation state of the monitor light branched by said branching device;
- and a pumping light interception device having a property for transmitting the signal light and intercepting the pumping light, which prevents leaked light of pumping light supplied to said polarization mode dispersion generating section from being input to said output monitor. [Fig 2, #5] [Col. 9, lines 12-24]

12. Regarding Claim 12, Kosaka discloses: An optical amplifier having a polarization mode dispersion compensation function according to claim 1,

- wherein an optical filter having a property for transmitting the signal light and intercepting the pumping light and amplified spontaneous emission light generated accompanying amplification of the signal light in said polarization

mode dispersion generation section, is provided on an optical path through which the signal light is propagated. [Col 5, lines 51-57]

13. Regarding Claim 13, Kosaka discloses: An optical amplifier having a polarization mode dispersion compensation function according to claim 1,

- wherein when said polarization mode dispersion generation section is constructed by cascade connecting a plurality of optical transmission media having birefringence, a rare earth element is doped on at least the optical transmission media disposed on the signal light input side among said plurality of optical transmission media, [Fig 10]
- and said pumping light supply section supplies forward pumping light to the optical transmission media doped with the rare earth element, of said polarization mode dispersion generation section. [Fig 2, #5] [Col. 9, lines 17-19]

14. Regarding Claim 14, Kosaka discloses: An optical amplifier having a polarization mode dispersion compensation function according to claim 1,

- wherein when said polarization mode dispersion generation section is constructed by cascade connecting a plurality of optical transmission media having birefringence, a rare earth element is doped on at least the optical transmission media disposed on the signal light output side among said plurality of optical transmission media, [Fig 10]
- and said pumping light supply section supplies backward pumping light to the optical transmission media doped with the rare earth element, of said

polarization mode dispersion generation section. [Fig 2, #5] [Col. 9, lines 17-19]

Claim Rejections - 35 USC § 103

15. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

16. Claims 5-8 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kosaka as applied to claim 1 above, and further in view of Sanders et al. (USP No. 6301273). Kosaka discloses an optical amplifier with all the limitations of claim 1, but fails to teach the application of the optical amplifier to a planar lightwave circuit. Sanders teaches an optical amplifier with a polarization mode compensation function and discloses the use of an erbium-doped waveguide, made in a substrate of lithium niobate. Therefore, it would have been obvious to one skilled in the art (e.g. an optical engineer) at the time the invention was made, to create an optical amplifier with the limitations and structure disclosed by Kosaka, but in the form of a planar photonic integrated circuit, for the purpose of modularity and miniaturization and all of the documented obvious advantages thereof.

17. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kosaka et al. as applied to claim 9 above, and further in view of Hwang et al. (USP App. No. 10/854,347). Kosaka discloses an optical amplifier with all the limitations of claim 9,

but fails to teach the functional equivalency of an isolator, a band-pass filter and a tap or a conventional optical fiber. Hwang teaches a wideband optical source composed of two fiber amplifiers with a plurality of connectors between them, including a mirror [Fig 2, #230], a filter [Fig 4, #432], an isolator [Fig 6, #630], and a coupler [Fig 3, #330]. Therefore, it would have been obvious to one skilled in the art (e.g. an optical engineer) at the time the invention was made, to substitute a filter [as in claim 10] or an isolator [as in claim 11] for an optically null component [as in claim 9]. As substitution is no more than the use of conventionally known optical amplifier filtering means available in the optics art.

Response to Arguments

18. Applicant's arguments filed on 10-26-2005 have been fully considered but they are not persuasive. With regard to claims 1-4, 9, and 12-14, applicant argues:

A. "In view of the above, the polarized-wave identifying/synthesizing unit 3 of Kosaka et al. can be defined as a unit having a function of fixing the signal lights input thereto at arbitrary polarization modes into those with specific polarization states so as to output them to the polarization maintaining optical amplifying medium 4. The unit 3 is not provided with a function of making the above-mentioned specific polarization states variable. This is further supported by the disclosure of Kosaka et al. which states that the powers of the output signal lights are detected by the detection unit 9, and the exciting unit 6 is controlled by the controller 10, so that the detected powers of the

output signal lights are maintained at predetermined levels as described in column 11, lines 54-61 of Kosaka et al. Thus, the polarization states of the output signal lights are not monitored by the detection unit 9, and the polarized-wave identifying/synthesizing part 3 is not controlled by the controller 10 of Kosaka et al."

Argument A. is found not convincing because the applicant does not clearly argue how Kosaka does not teach, suggest or disclose the claim language. In particular, the Examiner referenced [Col. 9, lines 5-12, 34-46] of Kosaka as disclosing the claim language. For example on column 9, lines 34-41, Kosaka states "According to the configuration described above, the polarized-wave identifying/synthesizing unit 3 makes the polarization states of the individual transmitted signals conveying pieces of information different from each other discriminable from each other as well as maintainable before supplying them to the polarization maintaining optical amplifying medium 4 which is excited by the exciting unit 6 through the introduction unit 5." The examiner considers "making polarizations states... discriminable from each other" to be polarization control, and the applicant has not claimed otherwise. Applicant has not clearly identified how the above disclosure fails to teach, suggest or disclose the claim language. Nor has the applicant amended the claims such that the examiner's interpretation of the claim language is excluded from the scope of the claims.

Conclusion

19. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ari M. Diacou whose telephone number is (571) 272-5591. The examiner can normally be reached on Monday - Friday, 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AMD 11/4/2005

JACK KEITH
SUPERVISORY PATENT EXAMINER